

Translation

PATENT COOPERATION TREATY

PCT/DE2003/002678



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference In1245WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DE2003/002678	International filing date (day/month/year) 08 August 2003 (08.08.2003)	Priority date (day/month/year) 23 August 2002 (23.08.2002)
International Patent Classification (IPC) or national classification and IPC H01L 29/792		
Applicant INFINEON TECHNOLOGIES AG		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 02 March 2004 (02.03.2004)	Date of completion of this report 12 October 2004 (12.10.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE2003/002678

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

☐ the international application as originally filed☒ the description:

pages \_\_\_\_\_ 1-18 \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☒ the claims:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, as amended (together with any statement under Article 19

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_ 1-17 \_\_\_\_\_, filed with the letter of 22 September 2004 (22.09.2004)

☒ the drawings:

pages \_\_\_\_\_ 1/5-5/5 \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☐ the sequence listing part of the description:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. ☐ The amendments have resulted in the cancellation of:☐ the description, pages \_\_\_\_\_☐ the claims, Nos. \_\_\_\_\_☐ the drawings, sheets/fig \_\_\_\_\_5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/DE 03/02678

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-17	YES
	Claims		NO
Inventive step (IS)	Claims	1-17	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-17	YES
	Claims		NO

### 2. Citations and explanations

#### 1. This report makes reference to the following documents:

- D1: EP-A-0 543 703 (SGS THOMSON MICROELECTRONICS) 26 May 1993
- D2: US-A-5 654 568 (NAKAO HIRONOBU) 5 August 1997 (1997-08-05)
- D3: US-B1-6 335 554 (YOSHIKAWA KUNIYOSHI) 1 January 2002 (2002-01-01)
- D4: WO 01/17030 A (MACRONIX AMERICA INC) 8 March 2001 (2001-03-08)
- D5: US-B1-6 388 293 (HAYASHI YUTAKA ET AL) 14 May 2002 (2002-05-14)
- D6: US-B1-6 366 500 (OGURA SEIKI ET AL) 2 April 2002 (2002-04-02)
- D7: US 2002/105023 A1 (KUO TUNG CHEN ET AL) 8 August 2002
- D8: US-B1-6 249 022 (LEE ROBIN ET AL) 19 June 2001 (2001-06-19)
- D9: US-A-3 731 163 (SHUSKUS A) 1 May 1973 (1973-05-01) .

#### 2. D1, D2 and D7 disclose non-volatile semiconductor components having a source area, a drain area and a

channel area therebetween, the entire channel area being designed with a charge storage layer. The division of the channel area into several sections with charge storage layers and programming layers was not already disclosed in these documents.

The division of the channel area of such a non-volatile semiconductor component is known from D3-D6, D8 and D9. These documents do not, however, disclose connecting layers that are formed on the semiconductor component and electrically connect the programming layers to the corresponding source area and drain area.

Therefore, the subject matter of claims 1 and 6 is novel. Even if a person skilled in the art were prompted to combine the teachings of these documents, he would not arrive at the claimed subject matter.